

Translation

## PATENT COOPERATION TREATY

PCT



524303

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/RU2003/000375	International filing date (day/month/year) 21 August 2003 (21.08.2003)	Priority date (day/month/year) 21 August 2002 (21.08.2002)
International Patent Classification (IPC) or national classification and IPC F17D 5/00, F16L 55/18		
Applicant GUROV, Alexandr Efimovich		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 03 March 2004 (03.03.2004)	Date of completion of this report 09 December 2004 (09.12.2004)
Name and mailing address of the IPEA/RU	Authorized officer
Faxsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/RU2003/000375

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

 the international application as originally filed the description:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the claims:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the drawings:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the sequence listing part of the description:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is: the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages \_\_\_\_\_ the claims, Nos. \_\_\_\_\_ the drawings, sheets/fig \_\_\_\_\_5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/RU 03/00375

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-18	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims		NO

## 2. Citations and explanations

Reference is made to the following documents:

D1: EP 0025344 A1  
 D2: RU 98111122 A  
 D3: RU 2155905 C2

The set of claims meets the requirement of industrial applicability.

The solution known from D1 is considered the prior art closest to the subject matter according to claims 1-10 and 17-18.

A pipeline is known from D1 (see description, pages 5-11), as well as a method for inspecting the condition of the pipeline, in which said pipeline is provided with a convex spiral for inspecting the condition of the pipeline wall by means of electromagnetic radiation, for example by an optical method using the spiral as a wave guide. The transport pipeline is presented in combination with a fibre optic spiral (FOS) inspection unit, and an inspection system; after interrogation and reply, the inspection unit reaches a conclusion about the state of the pipeline wall. The inspection system periodically interrogates the FOS inspection unit by directing electromagnetic radiation, for example optical radiation,

therealong in order to determine at what point the pipeline is damaged. The points where the pipeline is damaged are determined by variations in the optical oscillations.

The claimed pipe according to independent claim 1 differs in that the thread pitch of the spiral is selected no greater than the length of the critical fracture of the pipe. This enables the timely determination of dangerous longitudinal fractures and other defects in the pipe.

Such a selection of the thread pitch of the spiral is known from D2 (see claim 2).

Therefore the subject matter of claim 1 meets the requirement of novelty, and does not meet the requirement of inventive step.

Document D2 also indicates the presence of a plurality of spirals in a pipe, but not that their directions are different. It may be assumed that the directions of the spirals are the same. Therefore, dependent claim 2 meets the requirement of novelty and does not meet the requirement of inventive step.

Spiral surfaces in the wall of a pipeline are also known from D2, which are formed as a groove by rolling and then filled with glass. The characteristics of the glass-like mass in the description of the invention according to claim 1 (see description, page 8) are disclosed as "a hard substance, for example, glass". Therefore the features of claim 3 are known from D2, and the features of claim 4 are known from D1.

Therefore dependent claims 3 and 4 meet the requirement of novelty but do not meet the requirement of inventive step.

The method according to claim 5 differs from the

method known from D1 in that "the thread pitch of the conveying spiral is selected no greater than the length of the critical fracture of the pipe". This enables the timely determination of dangerous longitudinal fractures and other defects in the pipeline.

Said characterising features are known from D2, where they have the same properties. The subject matter of claim 5 meets the requirement of novelty but does not meet the requirement of inventive step.

The features of dependent claims 6-10 are also known and follow obviously from D2.

Therefore, dependent claims 6-10 meet the requirement of novelty but do not meet the requirement of inventive step.

In independent claim 11 the combination of features characterises a method for repairing a pipeline.

The prior art closest to the claimed method is the method known from D3 (see description, page 5, column 1, line 50 to column 2, line 50) for repairing metallic pipelines, consisting in using physical methods and devices (stress-scans, laser devices, x-ray devices, etc.) to determine stresses on the section to be repaired in the defect zone of a pipeline, calculating the reduction in operating pressure in the pipeline when the repair work is performed, cleaning the pipeline surface, anticorrosion treatment and repair of defects in the pipeline wall.

The claimed method according to claim 11 differs in that at least one spiral is formed in the pipeline whose pitch is selected no greater than the length of the critical fracture of the pipe, this spiral is checked to determine the defect in the pipeline wall, the defective wall is rebuilt using the heat of oscillations passed by the conveying spiral into the fracture opening.

Said characterising features ensure "the industrial testability of the pipeline", "timely determination of

dangerous longitudinal fractures and other defects in the pipeline" and "reduces the working hours required to repair damage to pipeline walls".

The above-mentioned characterising features of independent claim 11 are known from D2, where they have the same properties as described above.

The features of dependent claims 12-16 are known and follow obviously from documents D2 and D1, and the properties thereof are likewise known.

Therefore, the subject matter of claims 11-16 meet the requirement of novelty, and does not meet the requirement of inventive step.

The method according to claim 17 differs from the method known from D1 in that the device comprises, connected in series, a supply unit, an AC voltage converter, a radiator, and an optic-electronic pair which is connected to a sensor in the form of a fibre optic line and to the first input of a monitor unit, whose second input is connected to the DC/AC converter, the distance between the turns of the spiral of the fibre optic line being selected no greater than the length of the critical fracture.

These characterising features ensure "industrial testability of the pipeline", "prompt determination of dangerous longitudinal fractures and other defects in the pipeline", and "reduce the working hours required to repair damage to the pipeline wall".

The characterising features of independent claim 17, their purpose and the properties thereof are known from D2. The characterising features of dependent claim 18 are known from D2. Therefore, claims 17 and 18 meet the requirement of novelty, and do not meet the requirement of inventive step.

Therefore, the combination of features characterising the claimed group of inventions presented

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/RU 03/00375

in claims 1-18 meets the requirement of novelty, but does not meet the requirement of inventive step, as the claimed group of inventions follows obviously from the prior art.